

WHAT IS CLAIMED IS:

1. An audio information processing device comprising:
a subband dividing section dividing inputted audio information
including a sound signal into a plurality of frequency bands;
a scaling section calculating a scaling factor, which indicates a
5 multiplying power to a reference value, of each subband divided by the
subband dividing section into each of the frequency bands, and aligning
each dynamic range; and

a coding processing section compressing and coding an output
signal from the scaling section by using a MPEG system to output as
coded bit stream data; further including

10 a feature detection processing section extracting features of the
audio information on the basis of the scaling factors outputted from the
scaling section.

2. The audio information processing device as claimed in
claimed 1, wherein the feature detection processing section includes a
means of determining whether or not the audio information is of a voice
signal interval on the basis of the scaling factors.

3. The audio information processing device as claimed in
claim 1, wherein the feature detection processing section includes a
means of determining whether or not the audio information is of a
soundless signal interval on the basis of the scaling factors.

4. An audio information processing device comprising:
a subband dividing section dividing inputted audio information
including a sound signal into a plurality of frequency bands;
a scaling section calculating a scaling factor, which indicates a
5 multiplying power to a reference value, of each subband divided by the

subband dividing section into each of the frequency bands, and aligning each dynamic range; and

a coding processing section compressing and coding an output signal from the scaling section by using a MPEG system to output as
10 coded bit stream data; further including:

a feature detection processing section extracting features of the audio information on the basis of the scaling factors outputted from the scaling section; and

15 a signal level calculating section inputting thereto the scaling factor of each subband outputted from the scaling section, and calculating a signal level corresponding to the scaling factor; wherein

the feature detection processing section extracts features of the audio information on the basis of the signal levels calculated by the signal level calculating section.

5. The audio information processing device as claimed in claim 4, wherein:

the signal level calculating section inputs thereto the scaling factors in low-frequency bands outputted from the scaling section within
5 a predetermined period of time to calculate the signal levels; and

the feature detection processing section comprises:

a calculating means of finding a maximum value and a minimum value of the signal levels calculated by the signal level calculating section, and calculating a difference between the maximum
10 value and the minimum value; and

a determining means of, when the difference value calculated by the calculating means is greater than or equal to a predetermined threshold value, determining that the audio information is of a voice signal interval, on the other hand, when the difference value is less than
15 the threshold value, determining that the audio information is of a signal

interval except for voice.

6. The audio information processing device as claimed in claim 4, wherein:

the signal level calculating section inputs thereto all of the scaling factors outputted from the scaling section within a predetermined period of time to calculate the signal levels; and

the feature detection processing section includes a determining means of, when the signal levels calculated by the signal level calculating section are greater than or equal to a predetermined threshold value, determining that the audio information is of a sound signal interval, on the other hand, when the signal levels are less than the threshold value, determining that the audio information is of a soundless signal interval.

7. An audio information processing device comprising:

a stream dividing section, after inputting thereto bit stream data coded by a MPEG system, dividing the coded bit stream data composed of each subband divided into each frequency band into bit assigning information, a scaling factor value indicating a multiplying power to a reference value, and coded data in units of each subband; and

a decoding processing section executing a decoding process to the coded data divided by the stream dividing section in units of each subband to output as audio information; further including

10 a feature detection processing section extracting features of the audio information on the basis of the scaling factor values outputted from the stream dividing section.

8. The audio information processing device as claimed in claim 7, wherein the feature detection processing section includes a means of determining whether or not the audio information is of a voice

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signal interval on the basis of the scaling factor values.

9. The audio information processing device as claimed in claim 7, wherein the feature detection processing section includes a means of determining whether or not the audio information is of a soundless interval on the basis of the scaling factor values.

10. An audio information processing device comprising:

a stream dividing section, after inputting thereto bit stream data coded by a MPEG system, dividing the coded bit stream data composed of each subband divided into each frequency band into bit assigning information, scaling factor value indicating a multiplying power to a reference value, and coded data in units of each subband; and

a decoding processing section executing a decoding process to the coded data divided by the stream dividing section in units of each subband to output as audio information; further including:

a feature detection processing section extracting features of the audio information on the basis of the scaling factor values outputted from the stream dividing section; and

a signal level calculating section inputting thereto the scaling factor of each subband outputted from the stream dividing section to calculate a signal level; wherein

the feature detection processing section extracts features of the audio information on the basis of the signal levels calculated by the signal level calculating section.

11. The audio information processing device as claimed in claim 10, wherein:

the signal level calculating section inputs thereto the scaling factors in low-frequency bands outputted from the stream dividing

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5 section within a predetermined period of time to calculate the signal levels; and

the feature detection processing section comprises:

a calculating means of finding a maximum value and a minimum value of the signal levels calculated by the signal level calculating section, and calculating a difference between the maximum value and the minimum value; and

a determining means of, when the difference value calculated by the calculating means is greater than or equal to a predetermined threshold value, determining that the audio information is of a voice signal interval, on the other hand, when the difference value is less than the threshold value, determining that the audio information is of a signal interval except for voice.

12. The audio information processing device as claimed in claim 10, wherein:

the signal level calculating section inputs thereto all of the scaling factors outputted from the stream dividing section within a predetermined period of time to calculate the signal levels; and

the feature detection processing section includes a determining means of, when the signal levels calculated by the signal level calculating section are greater than or equal to a predetermined threshold value, determining that the audio information is of a sound signal interval, on the other hand, when the signal levels are less than the threshold value, determining that the audio information is of a soundless signal interval.

13. An audio information processing method, in an audio information processing device comprising:

a subband dividing section dividing inputted audio information including a sound signal into a plurality of frequency bands;

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5 a scaling section calculating a scaling factor, which indicates a multiplying power to a reference value, of each subband divided by the subband dividing section into each of the frequency bands, and aligning each dynamic range; and

10 a coding processing section compressing and coding an output signal from the scaling section by using a MPEG system to output as coded bit stream data; including

 a first step of extracting features of the audio information on the basis of the scaling factors outputted from the scaling section.

14. The audio information processing method as claimed in claim 13, wherein the first step further includes a second step of determining whether or not the audio information is of a voice signal interval on the basis of the scaling factors.

15. The audio information processing method as claimed in claim 13, wherein the first step further includes a third step of determining whether or not the audio information is of a soundless signal interval on the basis of the scaling factors.

16. An audio information processing method, in an audio information processing device comprising:

 a subband dividing section dividing inputted audio information including a sound signal into a plurality of frequency bands;

5 a scaling section calculating a scaling factor, which indicates a multiplying power to a reference value, of each subband divided by the subband dividing section into each of the frequency bands, and aligning each dynamic range; and

10 a coding processing section compressing and coding an output signal from the scaling section by using a MPEG system to output as

coded bit stream data; including:

a first step of extracting features of the audio information on the basis of the scaling factors outputted from the scaling section; and

15 a fourth step of inputting the scaling factor of each subband outputted from the scaling section, and calculating a signal level corresponding to the scaling factor; wherein

the first step further includes a fifth step of extracting features of the audio information on the basis of the signal levels calculated in the fourth step.

17. The audio information processing method as claimed in claim 16, wherein:

the fourth step further includes a sixth step of inputting the scaling factors in low-frequency bands outputted from the scaling section within a predetermined period of time to calculate the signal levels; and
5 the fifth step further includes:

a seventh step of finding a maximum value and a minimum value of the signal levels calculated at the sixth step, and calculating a difference between the maximum value and the minimum value; and

10 an eighth step of, when the difference value calculated at the seventh step is greater than or equal to a predetermined threshold value, determining that the audio information is of a voice signal interval, on the other hand, when the difference value is less than the threshold value, determining that the audio information is of a signal interval
15 except for voice.

18. The audio information processing method as claimed in claim 16, wherein:

the fourth step further includes a ninth step of inputting all of the scaling factors outputted from the scaling section within a

5 predetermined period of time to calculate the signal levels; and

the fifth step further includes a tenth step of, when the signal levels calculated at the ninth step are greater than or equal to a predetermined threshold value, determining that the audio information is of a sound signal interval, on the other hand, when the signal levels
10 are less than the threshold value, determining that the audio information is of a soundless signal interval.

19. An audio information processing method, in an audio information processing device comprising:

a stream dividing section, after inputting thereto bit stream data coded by a MPEG system, dividing the coded bit stream data composed of each subband divided into each frequency band into bit assigning information, a scaling factor value indicating a multiplying power to a reference value, and coded data in units of each subband; and

10 a decoding processing section executing a decoding process to the coded data divided by the stream dividing section in units of each subband to output as audio information; including

an eleventh step of extracting features of the audio information on the basis of the scaling factor values outputted from the stream dividing section.

20. The audio information processing method as claimed in claim 19, wherein the eleventh step further includes a twelfth step of determining whether or not the audio information is of a voice signal interval on the basis of the scaling factor values.

21. The audio information processing method as claimed in claim 19, wherein the eleventh step further includes a thirteenth step of determining whether or not the audio information is of a soundless

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interval on the basis of the scaling factor values.

22. An audio information processing method, in an audio information processing device comprising:

a stream dividing section, after inputting thereto bit stream data coded by a MPEG system, dividing the coded bit stream data composed of each subband divided into each frequency band into bit assigning information, a scaling factor value indicating a multiplying power to a reference value, and coded data in units of each subband; and

5 a decoding processing section executing a decoding process to the coded data divided by the stream dividing section in units of each subband to output as audio information; including:

an eleventh step of extracting features of the audio information on the basis of the scaling factor values outputted from the stream dividing section; and

a fourteenth step of inputting the scaling factor of each subband outputted from the stream dividing section to calculate a signal level; wherein

the eleventh step further includes a fifteenth step of extracting features of the audio information on the basis of the signal levels calculated by the fourteenth step.

23. The audio information processing method as claimed in claim 22, wherein:

the fourteenth step further includes a sixteenth step of inputting the scaling factors in low-frequency bands outputted from the stream dividing section within a predetermined period of time to calculate the signal levels; and

the fifteenth step further includes:

a seventeenth step of finding a maximum value and a

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minimum value of the signal levels calculated at the sixteenth step, and
10 calculating a difference between the maximum value and the minimum
value; and

an eighteenth step of, when the difference value calculated at
the seventeenth step is greater than or equal to a predetermined
threshold value, determining that the audio information is of a voice
15 signal interval, on the other hand, when the difference value is less than
the threshold value, determining that the audio information is of a signal
interval except for voice.

24. The audio information processing method as claimed in
claim 22, wherein:

the fourteenth step further includes a nineteenth step of
inputting all of the scaling factors outputted from the stream dividing
section within a predetermined period of time to calculate the signal
levels; and

the fifteenth step further includes a twentieth step of, when
the signal levels calculated at the nineteenth step are greater than or
equal to a predetermined threshold value, determining that the audio
10 information is of a sound signal interval, on the other hand, when the
signal levels are less than the threshold value, determining that the
audio information is of a soundless signal interval.

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